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XX. *An Eſſay on the periodical Appearing and Diſappearing of certain Birds, at different Times of the Year. In a Letter from the Honourable* Daines Barrington, *Vice-Preſ. R. S. to* William Watſon, *M. D. F. R. S.*

DEAR SIR,

Read April 2, 9, 30, and May 14, 1772.

AS I know, from ſome converſation we have had on this head, that you conſider the migration of birds as a very intereſting point in natural hiſtory, I ſend you the following reflections on this ſubject as they have occurred to me upon looking into moſt of the ornithologiſts who have written on this queſtion.

It will be firſt neceſſary in the preſent, as in all other diſputes, to define the terms on which the controverſy ariſes. I therefore premiſe that I mean by the word Migration, a periodical paſſage by a whole ſpecies of birds acroſs a conſiderable extent of ſea.

I do not mean therefore to deny that a bird, or birds, may poſſibly fly now and then from Dover to

Calais, from Gibraltar to Tangier, or any other ſuch narrow ſtrait, as the oppoſite coaſts are clearly within the bird's ken, and the paſſage is no more adventurous than acroſs a large freſh water lake.

I as little mean to deny that there may be a periodical flitting of certain birds from one part of a continent to another: the Royſton Crow, and Rock Ouzel, furniſh inſtances of ſuch a regular migration.

What I mean chiefly to contend therefore is, that it ſeems to be highly improbable, birds ſhould, at certain ſeaſons, traverſe large tracts of ſea, or rather ocean, without leaving any of the ſame ſpecies behind, but the ſick or wounded.

As this litigated point can only receive a ſatisfactory deciſion from very accurate obſervations, all preceding naturaliſts, from Ariſtotle to Ray, have ſpoken with much doubt concerning it.

Soon after the appearance of Monſ. Adanſon's voyage to Senegal, however, Mr. Collinſon firſt, in the Philoſophical Tranſactions *, and after him the moſt eminent ornithologiſts of Europe, ſeem to have conſidered this traveller's having caught four European Swallows on the 6th of October, not far from the African coaſt, as a deciſive proof, that the common ſwallows, when they diſappear in Europe, make for Africa during the winter, and return again to us in the ſpring.

It is therefore highly incumbent upon me, who profeſs that I am by no means ſatisfied with the account, given by Monſ. Adanſon of theſe European

* Part II. 1760, p. 459, & ſeq.

ſwallows,

ſwallows, to enter into a very minute diſcuſſion of what may, or may not, be inferred from his obſervation according to his own narrative.

I ſhall firſt however conſider the general arguments, from which it is ſuppoſed that birds of paſſage periodically traverſe oceans, which indeed may be almoſt reduced to this ſingle one, *viz.* we ſee certain birds in particular ſeaſons, and afterwards we ſee them not; from which data it is at once inferred, that the cauſe of their diſappearance is, that they have croſſed large tracts of ſea.

The obvious anſwer to this is, that no well-atteſted inſtances can be produced of ſuch a migration, as I ſhall endeavour to ſhew hereafter; but beſides this convincing negative proof, there are not others wanting.

Thoſe who ſend birds periodically acroſs the ſea, being preſſed with the very obvious anſwer I have before ſuggeſted, have recourſe to two ſuppoſitions, by which they would account for their not being obſerved by ſeamen during their paſſage.

The firſt is, that they riſe ſo high in the air that they become inviſible *; but unfortunately the riſing to this extraordinary height, or the falling from it, is equally deſtitute of any ocular proof, as the birds being ſeen during their paſſage.

I have indeed converſed with ſome people, who conceive they have loſt ſight of birds by their perpendicular flight; I muſt own, however, that I have

* It is well known that ſome ornithologiſts have even ſuppoſed that they leave our atmoſphere for that of the Moon. See Harl. Miſc. Vol. II. p. 561.

always ſuppoſed them to be ſhort-ſighted, as I never loſt the ſight of a bird myſelf, but from its horizontal diſtance, and I doubt much whether any bird was ever ſeen to riſe to a greater height than perhaps twice that of St. Paul's croſs *.

There ſeems to be but one method indeed, by which the height of a bird in the air may be eſtimated; which is, by comparing its apparent ſize with its known one, when very near us; and it need not be ſaid that method of calculating muſt depend entirely upon the ſight of the obſerver, who, if he happens not to ſee objects well at a diſtance, will very ſoon ſuppoſe the bird to be loſt in the clouds.

There is alſo another objection to the hypotheſis of birds paſſing ſeas at ſuch an extraordinary height, ariſing from the known rarefaction of the air, which may poſſibly be inconvenient for reſpiration, as well as flight; and if this was not really the caſe, one ſhould ſuppoſe that birds would frequently riſe to ſuch uncommon elevations, when they had no occaſion to traverſe oceans.

* Wild geeſe fly at the greateſt height of any bird I ever happened to attend to; and from comparing them with rooks, which I have frequently looked at, when perched on the croſs of St. Paul's, I cannot think that a wild-gooſe was ever diminiſhed, to my ſight at leaſt, more than he would be at twice the height of St. Paul's, or perhaps 300 yards. Mr. Hunter, F. R. S. informs me, that the bird which hath appeared to him as the higheſt flier, is a ſmall eagle on the confines of Spain and Portugal, which frequents high rocks. Mr. Hunter hath firſt ſeen this ſpecies of eagle from the bottom of a mountain, and followed it to the top, when the bird hath riſen ſo high as to appear leſs than he did from the bottom. Mr. Hunter however adds, that he could ſtill hear the cry, and diſtinguiſh the bird.

The

The Scotch Ptarmigan frequents the higheſt ground of any Britiſh bird, and he takes but very ſhort flights.

But it is alſo urged by ſome, that the reaſon why ſeamen do not regularly ſee the migration of birds, is becauſe they chooſe the night, and not the day, for the paſſage *.

Now though it may be allowed, that poſſibly birds may croſs from the coaſt of Holland to the Eaſtern coaſt of England (for example) during a long night, yet it muſt be dark nearly as long as it is within the Arctic circle to afford time for a bird to paſs from the Line to many parts of Europe, which Monſ. de Buffon calculates, may be done in about eight or nine days †.

If the paſſage happened in half the nights of the year, which have the benefit of moonlight, the birds would be diſcovered by the ſailors almoſt as well as in the day time; to which I muſt add that ſeveral ſuppoſed birds of paſſage (the Fieldfare in particular) always call when on their flight, ſo that the ſeamen muſt be deaf as well as blind, if ſuch flocks of birds eſcape their notice.

Other objections however remain to this hypotheſis of a paſſage during the night.

* Mr. Cateſby ſuppoſes that they may thus paſs in the night time, to avoid birds of prey. Phil. Tranſ. Abr. Vol. II. p. 887. But are not owls then ſtirring?

On the other hand, if they migrate in the day time, kites, hawks, and other birds of prey, muſt be very bad ſportſmen not to attend (like Arabs) theſe large and periodical caravans.

† In the preface to the firſt volume of his lately publiſhed Ornithology, p. 32.

Ninety-

Moſt birds not only ſleep during the night, but are as much incapacitated from diſtinguiſhing objects well as we are, in the abſence of the ſun: it is therefore inconceivable that they ſhould chooſe owl-light for ſuch a diſtant journey.

Beſides this, the Eaſtern coaſt of England, to which birds of paſſage muſt neceſſarily firſt come from the continent, hath many light-houſes upon it; they would therefore, in a dark night, immediately make for ſuch an object, and deſtroy themſelves by flying with violence againſt it, as is well known to every bat-fowler.

Having endeavoured to anſwer theſe two ſuppoſitions, by which it is contended that birds of paſſage may eſcape obſervation in their flight; I ſhall now conſider all the inſtances I have been able to meet with of any birds being actually ſeen whilſt they were croſſing any extent of ſea, though I might give a very ſhort refutation to them, by inſiſting, that if this was ever experienced, it muſt happen as conſtantly in a ſea, which is much navigated, as the return of the ſeaſons.

I cannot do better than to follow theſe according to chronological order.

The firſt in point of time is that which is cited by Willoughby *, from Bellon, whoſe words are thus tranſlated, "When we ſailed from Rhodes to "Alexandria, many quails flying from the North "towards the South, were taken in our ſhip, whence "I am perſuaded that they ſhift places; for for-"merly, when I ſailed out of the Iſle of Zant to "Morea, or Negropont, in the ſpring, I had ob-

* B. II. c. 11. §. 8.

"ſerved

" ſerved quails flying the contrary way to N. and S. " that they might abide there all ſummer, at which " time alſo a great many were taken in the ſhip."

Let us now conſider what is to be inferred from this citation.

In the firſt place, Bellon does not particularize the longitude and latitude of that part of the Mediterranean, which he was then croſſing; and in his courſe from Rhodes to Alexandria, both the iſlands of Scarpanto and Crete could be at no great diſtance: theſe quails therefore were probably flitting from one iſland of the Mediteranean * to another.

The ſame obſervation may be made with regard to the quails which he ſaw between Zant and Negropont, as the whole paſſage is crouded with iſlands, they therefore might be paſſing from iſland to iſland, or headland to headland, which might very probably lye Eaſt and Weſt, ſo as to occaſion the birds flying in a different direction, from which they paſſed the ſhip before.

I have therefore no objection to this proof of migration, if it is only inſiſted upon to ſhew that a quail ſhifts its ſtation at certain ſeaſons of the year; but cannot admit that it is fair from hence to argue that theſe birds periodically croſs large tracts of ſea.

Bellon himſelf ſtates, that when the birds ſettled upon the ſhip, they were taken by the firſt perſon who choſe to catch them, and therefore they muſt have been unequal to the ſhort flight which they were attempting.

* One of the Mediterranean iſlands is ſuppoſed to have obtained its ancient name of Ortygia from the numbers of quails.

It is very true that quails have been often pitched upon as inſtances of birds that migrate acroſs ſeas, becauſe they are ſcarcely ever ſeen in winter: it is well known, however, to every ſportsman, that this bird never flies 300 yards at a time, and the tail being ſo ſhort, it is highly improbable they ſhould be equal to a paſſage of any length.

We find therefore, that quails, which are commonly ſuppoſed to leave our iſland in the winter, in reality retire to the ſea coaſts, and pick up their food amongſt the ſea weeds *.

I have happened lately to ſee a ſpecimen of a particular ſpecies of quail, which is deſcribed by Dr. Shaw †, and is diſtinguiſhed from the other kinds by wanting the hind-claw.

Dr. Shaw alſo ſtates that it is a bird of paſſage. Now if quails really migrate from the coaſt of Barbary to Italy, as is commonly ſuppoſed, whence can it have ariſen that this remarkable ſpecies hath eſcaped the notice of Aldrovandus, Olina, and the other Italian ornithologiſts?

When I had juſt finiſhed what I have here ſaid with regard to the migration of quails, I have had an opportunity of ſeeing the ſecond volume of Monſ. de Buffon's ornithology ‡; where, under this article, he contends that this bird leaves Europe in the winter.

It is incumbent upon me, therefore, either to own I am convinced by what this moſt ingenious and able naturaliſt hath urged, or to give my reaſons why I

* See Br. Zool. Vol. II. p. 210. 2d Ed. octavo.

† Phyſ. Obſ. on the kingdom of Algiers, ch. 2.

‡ See p. 459, & ſeq.

ſtill

ſtill continue to diſſent from the opinion he maintains.

Though M. de Buffon hath diſcuſſed this point very much at large, yet I find only the following facts or arguments to be new.

He firſt cites the Memoirs of the Academy of Sciences *, for an account given by M. Godeheu of quails coming to the iſland of Malta in the month of May, and leaving it in September.

The firſt anſwer to this obſervation is, that the iſland of Malta is not only near to the coaſt of Africa, but to ſeveral of the Mediterranean iſlands; it therefore amounts to no more than the flitting I have before taken notice of †.

Monſ. de Buffon ſuppoſes that a quail only quits one latitude for another, in order to meet with a perpetual crop on the ground.

Now can it be ſuppoſed that there is that difference between the harveſt on the coaſt of Africa, and that of the ſmall quantity of grain which grows on the rocky iſland of Malta, that it becomes inconvenient to the bird to ſtay in Africa as ſoon as May ſets in; and neceſſary, on the other hand, to continue in Malta from May till September.

Monſ. de Buffon then ſuppoſes that quails make their paſſage in the night, as well as conceives them to be of a remarkably warm temperature ‡, and ſays

* Tom. III. p. 91 and 92.

† Both Monſ. de Godeheu and M. de Buffon ſeem to conceive that the quail ſhould fly in the ſame direction as the wind blows; but birds on the wing from point to point, which are at a conſiderable diſtance, fly againſt the wind, as their plumage is otherwiſe ruffled.

‡ As this is given for a reaſon why the African quails migrate Northward: Q. what is to become of the Icelandic quails during the ſummer?

that " *chaud comme une caille,*" is in every one's mouth *.

Now in the firſt place their migration during the night, is contrary to Belon's account, which M. de Buffon ſo much relies upon, who expreſly ſays, that the birds were caught in the day time †.

In the next place, I apprehend that " *chaud comme* " *une caille,*" alludes to the very remarkable ſalaciouſneſs of this bird, and not to the conſtant heat of its body.

Monſ. de Buffon then obſerves, that if quails are kept in a cage, they are remarkably impatient of confinement in the autumn and ſpring, whence he infers that they then want to migrate ‡; he alſo adds, in the ſame period, that this uneaſineſs begins an hour before the ſun riſes, and that it continues all the night.

This great naturaliſt does not ſtate this obſervation as having been made by himſelf, and it ſeems upon the face of it to be a very extraordinary one.

* All birds indeed are warmer by four degrees than other animals. See ſome ingenious thermometrical experiments by Mr. Martin of Aberdeen, Edinb. 1771, 12mo.

† Upon looking a ſecond time into Belon, he does not indeed ſtate whether it was in the day or the night; but if it had happened in the latter, this traveller and ornithologiſt could not well have omitted ſuch a circumſtance. Beſides this, he mentions in what direction the quails were flying, which he could not have diſcerned in the night.

‡ It may alſo ariſe from this bird's being of ſo quarrelſome a diſpoſition, and conſequently moſt likely to fight with its fellow priſoners when they are all in greateſt vigour after moulting, and on the return of the ſpring.

M. de Buffon allows that they will fight for a grain of millet, and adds, " car parmi les animaux il faut un ſujet reel pour ſe " battre." M. de Buffon hath never been in a cockpit.

No

No one (at leaſt with us) ever keeps quails in a cage except the poulterers, who always ſell them as faſt as they are fat, and conſequently can give no account of what happens to them during ſo long an impriſonment as this obſervation neceſſarily implies.

No ſuch remarkable uneaſineſs hath ever been attended to in any other ſuppoſed bird of paſſage during its confinement; but, allowing the fact to be as M. de Buffon ſtates, he himſelf ſupplies us with the real cauſe of this impatience.

He aſſerts, that quails conſtantly moult twice * a year, *viz.* at the cloſe both of ſummer and winter; whence it follows, that the bird, in autumn and the ſpring, muſt be in full vigour upon its recovery from this periodical illneſs: it can therefore as little brook confinement, as the phyſician's patient upon the return of health after illneſs.

Thus much I have thought it neceſſary to ſay, in anſwer to M. de Buffon, who "dum errat, docet," who ſcarcely ever argues ill but when he is miſinformed as to facts, and who often, from ſtrength of underſtanding, diſbelieves ſuch intelligence as might impoſe upon a naturaliſt of leſs acuteneſs and penetration.

* I have often heard that certain birds moult twice a year, ſome of which I have kept myſelf without their changing their feathers more than once.

I ſhould ſuppoſe that this notion ariſes from ſome birds not moulting regularly in the autumn every year; and when the change takes place in the following ſpring, they very commonly die: I can ſcarcely think that many of them are equal to two illneſſes of ſo long a continuance, which are conſtantly to return within twelvemonths.

I ſhould therefore rather account for the extraordinary briſkneſs of a quail in autumn and the ſpring, from its recovery after moulting in the former, and from the known effects of the ſpring as to moſt animals in the latter.

The next inſtance of a bird being caught at any diſtance from land, is in Sir Hans Sloane's voyage to Jamaica, who ſays, that a lark was taken in the ſhip 40 leagues from the ſhore: this therefore was certainly an unfortunate bird, forced out to ſea by a ſtrong wind in flying from headland to headland, as no one ſuppoſes the ſkylark to be a bird of paſſage.

The ſame anſwer may be given to a yellow-hammer's ſettling upon Haſſelquiſt's ſhip in the entrance of the Mediterranean, with this difference, that either the European or African coaſt muſt have been much nearer than 40 leagues *.

The next fact to be conſidered is what is mentioned in a letter of Mr. Peter Collinſon's, printed in the Philoſophical Tranſactions †.

He there ſays, "That Sir Charles Wager had "frequently informed him, that in one of his "voyages home in the ſpring as he came into ſound-"ings in our channel, that a great flock of ſwallows "almoſt covered his rigging, that they were nearly "ſpent and famiſhed, and were only feathers and "bones; but being recruited by a night's reſt, they "took their flight in the morning."

The firſt anſwer to this is, that if theſe were birds which had croſſed large tracts of ſea in their periodical migrations, the ſame accident muſt happen eternally, both in the ſpring and autumn, which is not however pretended by any one.

In the next place, the ſwallows are ſtated to be ſpent both by famine and fatigue; and how were they to procure any flies or other ſuſtenance on the

* See Haſſelquiſt's Travels, in princ.

† 1760, Part II. p. 461.

rigging of the admiral's ſhip, though they migth indeed reſt themſelves?

Sir Charles, however, expreſly informs us, that he was in the channel, and within ſoundings: theſe birds, therefore (like Bellon's quails) were only paſſing probably from headland to headland; and being forced out by a ſtrong wind, were obliged to ſettle upon the firſt ſhip they ſaw, or otherwiſe muſt have dropped into the ſea, which I make no doubt happens to many unfortunate birds under the ſame circumſtances.

As the birds which thus ſettled upon Sir Charles Wager's rigging were ſwallows, it very naturally brings me now to conſider the celebrated obſervation of Monſ. Adanſon, under all its circumſtances, as it hath been ſo much relied upon, and by naturaliſts of ſo great eminence.

Monſ. Adanſon is a very ingenious writer, and the publick is much indebted to him for many of the remarks which he made whilſt he reſided in Senegal.

I may, however, I think, preſume to ſay, that he had not before his voyage made ornithology his particular ſtudy; proofs of which are not wanting in other parts of his work, which do not relate to ſwallows.

For example, he ſuppoſes, that the Canary birds which are bred in Europe are white, and that they become ſo by our climate's being more cold than that of Africa.

" J'ai remarqué que le ſerin qui devient tout blanc " en France, eſt a Teneriffe d'un gris preſque auſſi " foncé que celui de la linotte; ce changement de " couleur provient vraiſemblablement de la froidure " de notre climat *."

* Voyage au Senegal, p. 13.

Mr.

Mr. Adanſon in this paſſage ſeems to have deduced two falſe inferences from having ſeen a few white Canary birds in France, which he afterwards compares with thoſe of Teneriff, and ſuppoſes the change of colour to ariſe merely from alteration of climate: it is known, however, almoſt to every one, that there is an infinite variety in the plumage of the European Canary birds, which, as in poultry, ariſes from their being pampered with ſo much food, as well as confinement *.

Monſ. Adanſon, in another part of his voyage †, deſcribes a Roller, which he ſuppoſes to migrate ſometimes to the Southern parts of Europe.

This circumſtance ſhews that he could not have looked much into books of natural hiſtory, becauſe the principal ſynonym of this bird is *garrulus Argentoratenſis* ‡; and Linnæus informs us that it is found even in Sweden ||.

* In the ſame paſſage, he compares the colour of the African Canary bird to that of the European linnet, and ſays it is *d'un gris preſque auſſi foncé*, whereas the European linnet is well known to be brown, and not grey. The linnet affords a very deciſive proof that the change of plumage does not ariſe from the difference of climate, but the two cauſes I have aſſigned. The cock bird, whilſt at liberty, hath a red breaſt: yet if it is either bred up in a cage from the neſt, or is caught with its red plumage, and afterwards moults in the houſe, it never recovers the red feathers.

That moſt able naturaliſt, Monſ. de Buffon, from having ſeen ſome cock linnets which had thus moulted off, or perhaps ſome hen linnets (which have not a red breaſt) conſiders them as a diſtinct ſpecies, and compares their breeding together in an aviary, to that of the Canary bird and goldfinch. Ornith. p. xxii.

† P. 16. ‡ Or of Straſburgh.

|| Faun. Suec. 94.

The

The ſtrong characteriſtic mark of this bird, is the outermoſt feathers of the tail, which able naturaliſts deſcribe as three fourths of an inch longer than the reſt *. Monſ. Adanſon, however, compares their length, not with the other feathers of the tail, but with the length of the bird's body, which is by no means the natural or proper ſtandard of compariſon.

The reaſon of my taking notice of theſe more minute inaccuracies in Monſ. Adanſon's account of birds, ariſes from Mr. Collinſon's relying upon his obſervations with regard to ſwallows being ſo abſolutely deciſive, becauſe he is repreſented to be ſo able a naturaliſt.

I ſhall now ſtate (very minutely) under what circumſtances theſe ſwallows were caught, and what ſeems to be the true inference from his own account.

He informs us, that four ſwallows ſettled upon the ſhip, not 50 leagues from the coaſt of Senegal, on the 6th of October; that theſe birds were taken, and that he knew them to be the true ſwallow of Europe †, which he ſuppoſes were then returning to the coaſt of Africa.

I ſhall now endeavour to ſhew that theſe birds could not be European ſwallows; nor, if they were, could they have been on their return from Europe to Africa.

* Willoughby, p. 131. Br. Zool. Vol. II. in append.

† I have before endeavoured to ſhew that Monſ. Adanſon does not always recollect with accuracy the plumage of the moſt common European birds, by what he ſays with regard to the linnet.

The

The word *hirondelle*, in French, is uſed as a general term for the four * ſpecies of theſe birds, as the term *ſwallow* is with us.

Now the four ſwallows thus caught and examined by Monſ. Adanſon were either all of the ſame ſpecies, or intermixed in ſome other proportion.

Would not then any naturaliſt in ſtating ſo material a fact (as he himſelf ſuppoſes it to be) have particularized of what ſpecies of ſwallow theſe very intereſting birds were?

Should not Monſ. Adanſon alſo have taken care to diſtinguiſh theſe ſuppoſed European ſwallows from two ſpecies of the ſame tribe, which bear a general reſemblance to thoſe of Europe, and are not only deſcribed, but engraved by Briſſon, under the name of *Hirondelle de Senegal & Hirondelle de rivage du Senegal* †?

Though Monſ. Adanſon was above a year on this part of the African coaſt, paid ſo much attention to ſwallows, and was ſo immediately acquainted with the different ſpecies on the firſt inſpection, yet he ſeems never to have diſcovered that there were ſuch African ſwallows as are thus deſcribed and engraved by Briſſon, though he muſt have ſeen them daily.

Monſ. Adanſon however concludes his account of the ſuppoſed European ſwallow, whilſt it continues on the coaſt of Senegal, by a circumſtance which

* *Viz.* the ſwallow κατ' εξοχην, the martin, the ſand martin, and the ſwift: I omit the goatſucker, becauſe this bird, though properly claſſed as a ſpecies of ſwallow by ornithologiſts, is not ſo conſidered by others.

† See Briſſon, Tom. II. pl. xiv.

ſeems

ſeems to prove to demonſtration of what ſpecies the four ſwallows caught in the ſhip really were.

He ſays that they rooſt on the ſand either by themſelves, or at moſt only in pairs, and that they frequent the coaſt much more than the inland parts *.

Theſe ſwallows therefore, if they came from Europe, muſt have immediately changed at once their known habits: and is it not conſequently moſt clear that they were of that ſpecies which Briſſon deſcribes under the name of *Hirondelle de rivage du Senegal?*

But though it ſhould be admitted, notwithſtanding what I have inſiſted upon, from Monſ. Adanſon's own account, that theſe were really ſwallows of the ſame kind with thoſe of Europe; yet I muſt ſtill contend that they could not poſſibly have been on their return from Europe to Africa, becauſe the high road for a bird from the moſt Weſtern point of Europe to Senegal, is along the N. Weſt coaſt of Africa, which projects greatly to the Weſtward of any part of Europe.

What then could be the inducement to theſe four ſwallows to fly 50 leagues to the Weſtward of the coaſt of Senegal, ſo much out of the proper direction?

It ſeems to me therefore, very clear, that theſe ſwallows (whether of the European kind or not) were flitting from the cape de Verde iſlands to the

* Voyage au Senegal, p. 67. I wiſh Monſ. Adanſon had alſo informed us whether theſe ſwallows had the ſame notes with thoſe of Europe, which is a very material circumſtance in the natural hiſtory of birds, though little attended to by moſt ornithologiſts.

coaſt of Africa, to which ſhort flight, however, they were unequal, and were obliged from fatigue to fall into the ſailors hands.

Monſ. Adanſon likewiſe mentions * that the ſhip's company caught a Roller on the 26th of April, which he ſuppoſes was on its paſſage to Europe, though he was then within ſight of the coaſt of Senegal: this bird, however, muſt be admitted not to have had ſufficient ſtrength to reach the firſt ſtage of this round-about journey, and was therefore probably forced out to ſea by a ſtrong wind, in paſſing from head-land to head-land.

But I muſt not diſmiſs what hath been obſerved with regard to the ſwallows ſeen by Monſ. Adanſon at Senegal, without endeavouring alſo to anſwer what M. de Buffon hath not only inferred from it, but hath endeavoured to confirm by an actual experiment †.

M. de Buffon, from the many inſtances of ſwallows being found torpid even under water, very readily admits, that all the birds of this genus do not migrate, but only that ſpecies which was ſeen by Monſ. Adanſon in Africa, and which he generally refers to as the chimney ſwallow ‡; but from the outſet, ſeems

* Voyage au Senegal, p. 15.

† See the two prefatory diſcourſes to his ſixteenth volume of natural hiſtory.

‡ So little do naturaliſts know of this very common bird, that I believe it hath never yet been obſerved by any writer, that the male ſwallow hath only the long ſlender feathers in the tail, which are conſidered as its moſt diſtinguiſhing marks. I venture to make this remark upon having ſeen the difference in two ſwallows which are in Mr. Tunſtall's collection, F. R. S. as alſo in two others, which have lately been preſented to the Muſeum

to ſhew that he hath himſelf confounded this ſpecies with the martin.

" Prenons un ſeul oiſeau, par exemple, l'hiron-
" delle, celle que tout le monde connoit, qui paroit
" au printems, diſparoit en automne, & fait ſon nid
" avec de la terre contre les fenetres, ou dans les
" cheminees." p. 23.

It is very clear that the deſign in this period is to ſpecify a particular bird in ſuch a manner that no doubt could remain with any one about the ſpecies referred to; and from other paſſages which follow, it is as clear that Monſ. de Buffon means to allude to the ſwallow κατ' εξοχην.

Though this was certainly the intention of this moſt ingenious naturaliſt, it is to me very evident that the martin, and not the ſwallow, was in his contemplation, becauſe he firſt ſpeaks of the bird's building againſt windows, before he mentions chimneys, and therefore ſuppoſes that either place is indifferent; which is not the caſe, becauſe the ſwallow ſeldom builds on the ſides of windows, or the martin in chimneys.

There are perhaps three or four martins to one ſwallow in all parts; and from their being the more common bird of the two, as well as from the circumſtance of their building at the corner of windows (and conſequently being eternally in our ſight), nine-

of the Royal Society, by the directors of the Hudſon's Bay company.

Theſe long feathers would be very inconvenient to the hen during incubation; and they are likewiſe confined to the cock *widow-bird*, as, from their more extraordinary length, they would be ſtill more ſo.

teen out of twenty, when they ſpeak of a ſwallow, really mean a martin *.

I only take notice of this ſuppoſed inacuracy in Monſ. de Buffon, becauſe, if that able naturaliſt does not ſpeak of the different ſorts of ſwallows with that preciſion which is neceſſary upon ſuch an occaſion, why ſhould he rely ſo intirely upon the impoſſibility of Monſ. Adanſon's being miſtaken?

I ſhall now ſtate the experiment of Monſ. de Buffon, to prove that the ſwallow is not torpid in the winter, and muſt therefore migrate to the coaſt of Senegal †.

He ſhut up ſome ſwallows *(hirondelles)* in an ice houſe, which were there confined "plus ou moins "de temps;" and the conſequence was, that thoſe which remained there the longeſt died, nor could they be revived by expoſing them to the ſun; and, that thoſe "qui n'avoient ſouffert le froid de la "glaciere que pendant peu de tems" were very lively when permitted to make their eſcape.

* In the ſame manner the generical name in other languages, for this tribe of birds, always means the martin, and not the ſwallow.

Thus Anacreon complains of the χελιδων for waking him by its twittering.

Now if it be conſidered that there was only the kitchen chimney in a Grecian houſe, it muſt have been the martin which built under the eaves of the window, that was troubleſome to Anacreon, and not the ſwallow.

Ovid alſo ſpeaking of the neſt of the *hirunda*, ſays,

——luteum ſub trabe figit opus.

by which he neceſſarily alludes to the martin, and not the ſwallow.

† Plan de l'ouvrage, p. 15.

Monſ.

Monſ. de Buffon does not, in this account of his experiment, ſtate the time during which the birds were confined; but as the trial muſt have been made in France, the ſwallows which he procured could not be expected to be torpid either in an ice-houſe * or any other place, becauſe the ſeaſon for their being in that ſtate was not yet arrived.

I cannot alſo agree with M. de Buffon that thoſe birds which were ſhut up the longeſt time died through cold, as he ſuppoſes, but for want of food, as he neither ſupplied them with any flies, nor, if he had, could the ſwallows have caught them in the dark: a very ſhort faſt kills theſe tender animals, which are feeding every inſtant when on the wing.

It therefore ſeems not to follow from this, or any other experiment, that ſwallows muſt neceſſarily migrate (as Monſ. de Buffon ſuppoſes) to the coaſt of Senegal.

* The very name of an ice-houſe almoſt ſtrikes one with a chill; I placed, however, a thermometer in one near Hyde Park Corner, on the 23d of November, where it continued 48 hours, and the mercury then ſtood at 43½ by Fahrenheit's ſcale.

This is therefore a degree of cold which ſwallows ſometimes experience whilſt they continue in ſome parts of Europe, without any apparent inconvenience; and it ſhould ſeem that the cold vapours which may ariſe from the included ice, ſink the thermometer only 7 or 8 degrees, as the temperature in approved cellars is commonly from 50 or 51 throughout the year.

Sir William Hamilton informs me, that he hath frequently ſeen ſwallows in the winter between Naples and Puzzuoli, when the weather was warm; as does Mr. Hunter, F. R. S. that he hath obſerved them during the ſame ſeaſon, on the confines of Spain and Portugal. It ſhould ſeem from this, that very mild and warm weather for any continuance always wakes theſe birds from their ſtate of torpidity.

Swallows

Swallows are ſeen during the ſummer, in every part of Europe from Lapland to the Southern coaſt of Spain; nor is Europe vaſtly inferior in point of ſize to Africa.

If ſwallows therefore retreat to Africa in the winter, ſhould not they be diſperſed over the whole Continent of Africa, juſt as they are over every part of Europe?

But this moſt certainly is not ſo: Dr. Shaw, who was a very good naturaliſt and attended much to the birds in the neighbourhood of Algiers (as appears by his account of that country), makes no mention of any ſuch circumſtance, nor have we heard of it from any other traveller *.

It muſt be admitted indeed, that Herodotus ſpeaking of a part of upper Egypt (which he had never ſeen) ſays, that kites and ſwallows never leave it †; this, however, totally differs from Monſ. Adanſon's account, who informs us that they diſappear in Senegal on the approach of ſummer.

It ſeems to follow therefore, from this ſilence in others, that ſwallows cannot be accommodated for their winter reſidence in any part of that vaſt continent, but in the neighbourhood of Senegal.

But this is not the whole objection to ſuch an hypotheſis.

* It may alſo be obſerved here, that credit is in ſome meaſure given to M. Adanſon's eyeſight, againſt that of all the Engliſh, French, Dutch, Portugueze, and Danes, who have been ſettled not far from Senegal for above a century, many of which have ſpent the greateſt part of their lives there, and whoſe notice, ſwallows ſeen during the winter, muſt have probably attracted.

† Ικτινοι δε και χελιδονες δι ἑλεος ουτες ουκ απολειπουσι. Euterpe, p. 98. ed. Gale.

If

If the ſwallows of Europe, when they diſappear in thoſe parts, retreat to the coaſt of Senegal, what neceſſarily follows with regard to a Lapland ſwallow?

I will ſuppoſe ſuch a bird to have arrived ſafely at his winter quarters upon the approach of that ſeaſon in Lapland; but he muſt then, according both to Monſ. Adanſon's and de Buffon's account, return to Lapland in the ſpring, or at leaſt ſome other ſwallow from Senegal fill his place *.

Such a bird immediately upon its arrival on the Southern coaſt of Spain would find the climate and food which it deſired to attain, and all proper conveniences for its neſt: what then is to be its inducement for quitting all theſe accommodations which it meets with in ſuch profuſion, and puſhing on immediately over ſo many degrees of European continent to Lapland, where both martin and ſwallow can procure ſo few eaves of houſes to build upon? What alſo is to be the inducement to theſe birds, when they have arrived at that part of the Norwegian coaſt which is oppoſite to the Ferroe iſlands, to croſs degrees of ſea, in order

* Mr. Stephens, A. S. S. informs me, that there was a neſt of martins for twenty years together in the hall of his houſe in Somerſetſhire (near Bath); nor could the old birds procure food either for themſelves, or their young, till the door was opened in the morning.

Can it it be ſuppoſed that the ſame birds or their deſcendants could have ſo long fixed upon ſo very inconvenient a ſpot, to which they conſtantly returned from the coaſt of Africa, neglecting ſo many others, which they muſt have always paſſed by? Does it not alſo afford a moſt ſtrong preſumption, that they were torpid during winter in the neighbourhood of this old hall?

to build in ſuch ſmall ſpots of land, where there are ſtill fewer houſes?

The next fact I have happened to meet with of a bird's being ſeen at a conſiderable diſtance from the ſhore, is in Mr. Forſter's lately publiſhed tranſlation of Kalm's account of N. America*.

We are there informed that a bird (which Kalm calls a ſwallow) was ſeen near the ſhip on the 2d of September, and, as he ſuppoſes, 20 degrees from the continent of America †.

It appears however, by what he before ſtates in his journal, that the ſhip was not above 5 degrees from the iſland of Sable.

Beſides, if it is contended that this was an European ſwallow on its paſſage acroſs the Atlantic on the 2d of September, it is too early even for a ſwift, to have been on its migration, which diſappears with us ſooner than the three other ſpecies of European ſwallows ‡.

Only two more inſtances have occurred of birds being ſeen in *open* ſea that have been deſcribed

* Vol. I. p. 24.

† It may not be improper here to obſerve, that in all inſtances of birds being ſeen at ſea any great diſtance from the coaſt, it is not improbable that they may have before ſettled on ſome other veſſel, or perhaps on a piece of floating wreck.

By accidents of this ſort, even butterflies have ſometimes been caught by the ſailors at 40 leagues diſtance from any land. See Monſ. l'Abbé Courte de la Blanchadiere's Voyage to Brazil, Paris, 1759, 21mo. p. 169.

‡ The bird mentioned by Kalm was probably an American ſwallow, forced out to ſea by ſome accidental ſtorm: there are ſeveral ſpecies of them and they ſeem to bear a general affinity to thoſe of Europe.

with

with any ſort of preciſion, which I ſhall juſt ſtate, as I would not decline giving the beſt anſwer I am able to every argument and fact which may be relied upon, by thoſe who contend that birds periodically migrate acroſs oceans.

On the 30th of March, 1751, Oſbeck, in his voyage from Sweden to China *, met with a ſingle houſe ſwallow near the Canary Iſlands, which was ſo tired that it was caught by the ſailors: Oſbeck alſo ſtates, that though it had been fine weather for ſeveral preceding days, the bird was as wet as if it had juſt emerged from the bottom of the ſea.

If this inſtance proves any thing, it is the ſubmerſion and not the migration of ſwallows ſo generally believed in all the northern parts of Europe. It would ſwell this Letter to a moſt unreaſonable ſize, to touch only upon this litigated point; and I ſhall, for the preſent, ſuppreſs what hath happened to occur to me on this controverted queſtion †.

* See the lately publiſhed tranſlation of this voyage.

† I will, however, mention one moſt deciſive fact on this head.

Mr. Stephens, A. S. S. informs me, that, when he was fourteen years of age, a pond of his father's (who was vicar of Shrivenham in Berkſhire) was cleaned, during the month of February; that he picked up himſelf a cluſter of three or four ſwallows (or martins), which were caked together in the mud, and that he carried them into the kitchen, on which they ſoon afterwards flew about the room, in the preſence of his father, mother, and others. Mr. Stephens alſo told me, that his father (who was a naturaliſt) obſerved at the time, he had read of ſimilar inſtances in the northern writers. This fact is alſo confirmed to me by the Reverend Dr. Pye, who was then at ſchool in Shrivenham, as alſo by a very ſenſible land-ſurveyor, who now lives in the village.

Oſbeck afterwards, in the courſe of his voyage, mentions, that a ſwallow (indefinitely) followed the ſhip, near Java, on the 24th of July, and another on the 14th of Auguſt, in the Chineſe ſea, as he terms it.

After what I have obſerved before with regard to other inſtances of the ſame ſort, I need ſcarcely ſay that this naturaliſt does not ſtate of what ſpecies theſe ſwallows were; and that, from the latitudes in which they were ſeen, they muſt have been ſome of the Aſiatic kinds.

I cannot, however, diſmiſs this article of the ſwallow, without adding ſome general reaſons, which ſeem to prove the great improbability of this or any other bird's periodically migrating over wide tracts of ſea; and I the rather do it in this place, becauſe

There are ſeveral reaſons why ſwallows ſhould not be frequently thus found; ponds are ſeldom cleaned in the winter, as it is ſuch cold work for the labourers; and the ſame inſtinct which prompts the bird thus to conceal itſelf, inſtructs it to chooſe ſuch a place of ſecurity, that common accidents will not diſcover it.

But the ſtrongeſt reaſon for ſuch accounts not being more numerous, is, that facts of this ſort are ſo little attended to; for though I was born within half a mile of this pond, and have always had much curioſity with regard to ſuch facts, yet I never heard a ſyllable about this very material and intereſting account, till very lately.

To this fact I muſt alſo add, that ſwallows may be conſtantly taken in the month of October, during the dark nights, whilſt they ſit on the willows in the Thames, and that one may almoſt inſtantaneouſly fill a large ſack with them, becauſe at this time they will not ſtir from the twigs, when you lay your hands upon them. This looks very much like their beginning to be torpid before they hide themſelves under the water.

A man near Brentford ſays, that he hath caught them in this ſtate in the eyt oppoſite to that town, even ſo late as November.

the

the ſwallow is commonly pitched upon as the moſt notorious inſtance of ſuch a regular paſſage.

This ſeems to ariſe firſt from its being ſeen in ſuch numbers during the ſummer, from its appearing almoſt always on the wing, and from its feeding in that poſition; from which two latter circumſtances it is ſuppoſed to be the beſt adapted for ſuch diſtant migrations.

And firſt, let us conſider, from the few facts or reaſons we have to argue from, what length of flight either a ſwallow or any other bird is probably equal to.

A ſwallow, it is true, ſeems to be always on the wing; but I have frequently attended, as much as I could, on a particular one; and it hath appeared to me, that the bird commonly returned to its neſt in eight or ten minutes: as for extent of flight, I believe I may venture to ſay, that theſe birds are ſeldom a quarter of mile from their mate or young ones; they feed whilſt on the wing, and are perpetually turning ſhort round to catch the inſects, who endeavour to elude them as a hare does a greyhound.

It therefore ſeems to me, that ſwallows are by no means equal to long flights, from their practice during their ſummer reſidence with us.

I have long attended to the flight of birds; and it hath always appeared to me, that they are never on the wing for amuſement (as we walk or ride), but merely in ſearch of food.

The only bird which I have ever obſerved to fly without any particular point of direction, is the rook: theſe birds will, when the wind is high,

" Ride in the whirlwind, and enjoy the ſtorm."

They never fly, however, at this time, from point to point, but only tumble in the air, merely for their diverſion.

It ſeems, therefore, that birds are by no means calculated for flights acroſs oceans, for which they have no previous practice: and they are, in fact, always ſo fatigued, that, when they meet a ſhip at ſea, they forget all apprehenſions, and deliver themſelves up to the ſailors.

Let us now conſider another objection to the migration of the ſwallow, which Monſ. de Buffon ſuppoſes may croſs the Atlantic to the Line in eight days *; and this not only from the want of reſt, but of food, during the paſſage.

A ſwallow, indeed, feeds on the wing: but where is it to find any inſects, whilſt it is flying over a wide expanſe of ſea? This bird, therefore, if it ever attempted ſo adventurous a paſſage, would ſoon feel a want of food, and return again to land, where it had met with a conſtant ſupply from minute to minute.

I am aware it may be here objected, that the ſwallow leaves us on the approach of winter, when ſoon no flying inſects can be procured: but I ſhall hereafter endeavour to ſhew, that theſe birds are then torpid, and, conſequently, can want no ſuch food.

Another objection remains to the hypotheſis of migration, which is, that birds, when flying from

* Diſcours ſur la nature des oiſeaux, p. 32.

point

point to point, endeavour always to have the wind againſt them *, as is periodically experienced by the London bird-catchers, in March and October, when they lay their nets for ſinging birds †.

The reaſon, probably, for birds thus flying againſt the wind is, that their plumage may not be ruffled, which indeed I have before had occaſion to mention.

Let us ſuppoſe, then, a ſwallow to be equal to a paſſage acroſs the Atlantic in other reſpects; how is the bird to be inſured of the wind's continuing for days in the ſame quarter; or how is he to depend upon its continuing to blow againſt his flight with moderation? for who can ſuppoſe that a ſwallow can make his way to the point of direction, when buffeted by a ſtorm blowing in the teeth of his intended paſſage ‡?

Laſtly, can it be conceived that theſe, or any other birds, can be impelled by a providential inſtinct, regularly to attempt what ſeems to be attended with ſuch inſuperable difficulties, and what moſt frequently leads to certain deſtruction?

But it will ſtill be objected, that as ſwallows regularly appear and diſappear at certain ſeaſons, it is incumbent upon thoſe who deny their migration, to

* Kalm, in his voyage to America, makes the ſame obſervation, with regard to flying fiſh, and Valentine ſays, that if the wind does not continue to blow againſt the bird of paradiſe, it immediately drops to the ground.

† Theſe birds, as it ſhould ſeem, are then in motion; becauſe, at thoſe ſeaſons, the ground is plowed either for the winter or lent corn.

‡ I have myſelf attended to ſwallows during a high wind, and have obſerved that they fly only in ſheltered places, whilſt they almoſt touch the ſurface of the ground.

ſhew

ſhew what becomes of them in Europe during our winter.

Though it might be anſwered, that it is not neceſſary, thoſe who endeavour to ſhew the impoſſibility of another ſyſtem or hypotheſis, ſhould from thence be obliged to ſet up one of their own; yet I ſhall, without any difficulty, ſay, that I at leaſt am convinced ſwallows (and perhaps ſome other birds) are torpid during the winter.

I have not, I muſt own, myſelf ever ſeen them in this ſtate; but, having heard inſtances of their being thus found, from others of undoubted veracity, I have not ſcarcely the leaſt doubt with regard to this point.

It is, indeed, rather difficult to conceive why ſome ornithologiſts continue to withhold their aſſents to ſuch a cloud of witneſſes, except that it perhaps contradicts a favourite hypotheſis which they have already maintained.

Why is it more extraordinary that ſwallows ſhould be torpid during the winter, than that bats are found in this ſtate, and ſo many inſects, which are the food of ſwallows?

But it may be ſaid, that as the ſwallows have crowded the air during the ſummer, in every part of Europe ſince the creation, and as regularly diſappear in winter, why have not the inſtances of their being found in a torpid ſtate been more frequent?

To this it may be anſwered, that though our globe may have been formed ſo many centuries, yet the inhabitants of it have ſcarcely paid any attention to the ſtudy of natural hiſtory, but within theſe late years.

As

As for the ancient Greeks and Romans, their dreſs prevented their being ſo much in the fields as we are; or, if they heard of a rather extraordinary bird in their neighbourhood, they had not a gun to ſhoot it: the only method of attaining real knowledge in natural hiſtory, depends almoſt entirely upon the having frequent opportunities of thus killing animals, and examining them when dead.

If they did not ſtir much in their own country, much leſs did they think of travelling into diſtant regions; want of bills of exchange, and of that curioſity which ariſes from our being thoroughly acquainted with what is near us at home, probably occaſioned this; to which may alſo be added, the want of a variety of languages: ſcarcely any Greek ſeems to have known more than his own tongue, nor Roman more than two *.

Ariſtotle, indeed, began ſomething like a ſyſtem of natural hiſtory, and Pliny put down, in his common place-book, many an idle ſtory; but, before the invention of printing, copies of their works could not be ſo generally diſperſed, as to occaſion much attention to what might be intereſting facts for the natural hiſtorian.

In the ſixteenth century, Geſner, Belon, and Aldrovandus, publiſhed ſome materials, which might be of uſe to future naturaliſts; but, in the ſeventeenth, Ray and Willoughy firſt treated this extenſive branch of ſtudy, with that clearneſs of method,

* It need be ſcarcely here mentioned alſo, that their navigation was confined to the Mediteranean, from the compaſs not having been then diſcovered.

perſpicuity

perſpicuity of deſcription, and accuracy of obſervation, as hath not, perhaps, been ſince exceeded.

The works of theſe great naturaliſts were ſoon diſperſed over Europe, and the merit of them acknowledged; but it ſo happened, that Sir Iſaac Newton's amazing diſcoveries in natural philoſophy making their appearance about the ſame time, engaged entirely the attention of the learned.

In proceſs of time, all controverſy was ſilenced by the demonſtration of the Newtonian ſyſtem; and then the philoſophical part of Europe naturally turned their thoughts to other branches of ſcience.

Since this period, therefore, and not before, natural hiſtory hath been ſtudied in moſt countries of Europe; and conſequently, the finding ſwallows in a ſtate of torpidity, or on the coaſt of Senegal, during the winter, begins to be an intereſting fact, which is communicated to the world by the perſon who obſerves it.

To this I may add, that the common labourers, who have the beſt chance of finding torpid birds, have ſcarcely any of them a doubt with regard to this point; and conſequently, when they happen to ſee them in this ſtate, make no mention of it to others; becauſe they conſider the diſcovery as neither uncommon or intereſting to any one.

Molyneux, therefore, in the Philoſophical Tranſactions *, informs us, that this is the general belief of the common people of Ireland, with regard to land-rails; and I have myſelf received the ſame anſwer from a perſon who, in December, found ſwallows torpid in the ſtump of an old tree.

* Phil. Tranſ. abr. Vol. II. p. 853.

Another

Another reaſon why the inſtances of torpid ſwallows may not be expected ſo frequently, is, that the inſtinct of ſecreting themſelves at the proper ſeaſon of the year, likewiſe ſuggeſts to them, it's being neceſſary to hide themſelves in ſuch holes and caverns, as may not only elude the ſearch of man, but of every other animal which might prey upon them; it is not therefore by any common accident that they are ever diſcovered in a ſtate of torpidity.

Since the ſtudy of natural hiſtory, however, hath become more general, proofs of this fact are frequently communicated, as may appear in the Britiſh Zoology *.

That it may not be ſaid, however, I do not refer to any inſtance which deſerves credit, if properly ſifted, I beg leave to cite the letter from Mr. Achard to Mr. Collinſon, printed in the Philoſophical Tranſactions †, from whence it ſeems to be a moſt irrefragable fact, that ſwallows ‡ are annually diſcovered in a torpid ſtate on the banks of the Rhine. I ſhall alſo refer to Dr. Birch's Hiſtory of the Royal Society ‖, where it is ſtated, that the celebrated Harvey diſſected

* See Vol. II. p. 250. Brit. Zool. ill. p. 13, 14. As alſo Mr. Pennant's Tour in Scotland, p. 199.

† 1763, p. 101.

‡ "Swallows or martins," are Mr. Achard's words, which I the rather mention, becauſe Mr. Collinſon complains that the ſpecies is not ſpecified.

Mr. Collinſon himſelf had endeavoured to prove, that ſand martins are not torpid, Phil. Tranſ. 1760, p. 109. and concludes his letter, by ſuppoſing that all the ſwallow tribe migrates, therefore the ſwift is the only ſpecies remaining; for his friend Mr. Achard ſhews to demonſtration, that ſwallows or martins are torpid; he does not, indeed, preciſely ſtate which of them.

‖ Vol. IV. p. 537.

ſome, which were found in the winter, under water, and in which he could not obſerve any circulation of the blood *.

Aſſuming it, therefore, from theſe facts, that ſwallows have been found in ſuch a ſtate, I would aſk the partiſans of migration, whether any inſtance can be produced where the ſame animal is calculated for a ſtate of torpidity and, at the ſame time of the year, for a flight acroſs oceans?

But it may be urged, poſſibly, that if ſwallows are torpid when they diſappear, the ſame thing ſhould happen with regard to other birds, which are not ſeen in particular parts of the year.

To this I anſwer, that this is by no means a neceſſary inference: if, for example, it ſhould be inſiſted that other birds beſides the cuckow are equally careleſs with regard to their eggs, it would be immediately allowed that the argument ariſing from

* As the ſwallows were found in the winter, they muſt have been in a ſtate of torpidity, as otherwiſe the animals muſt have been putrid.

I ſhall likewiſe here refer to Phil. Tranſ. abr. Vol. V. p. 33. where Mr. Derham ſays, that he heard a ſwift ſqueak in an hole of his houſe on the 17th of April; but that, the weather being cold, it did not ſtir abroad for ſeveral days.

This ſeems to be a ſtrong inſtance of a bird's firſt waking from a ſtate of torpidity, but reſuming its ſleep on the weather being ſevere.

I ſhall cloſe the proofs on this head (which I could much enlarge) by the dignified teſtimony of Sigiſmond, King of Poland, who affirmed on his oath, to the cardinal Commendon, that he had frequently ſeen ſwallows, which were found at the bottom of lakes. See the life of cardinal Commendon, p. 211. Paris, 1671. 4to.

ſuch ſuppoſed analogy could by no means be relied upon *.

It is poſſible, however, that ſome other birds, which are conceived to migrate, may be really torpid as well as ſwallows; and if it be aſked why they are not ſometimes alſo ſeen in ſuch a ſtate during the winter, the anſwer ſeems to be, that perhaps there may be a thouſand ſwallows to any other ſort of bird, and that they commonly are found torpid in cluſters.

* I here ſuppoſe the common notion about the cuckow to be true; becauſe both learned and ignorant ſeem equally to agree in the fact.

During the preſent ſummer, however, a girl brought a full feathered young cuckow to a gentleman's houſe, where I happened to be, who ſaid, that it had been for ſeveral days before fed by another bird of equal ſize with itſelf; which therefore could not be a hedge-ſparrow, or other ſmall bird, but the parent cuckow.

I have alſo lately been favoured, by Mr. Pennant, with the following extract from a manuſcript of Derham's on inſtinct.

"The Rev. Mr. Stafford was walking in Gloſſop-dale in the "Peak of Derbyſhire, and ſaw a cuckow riſe from its neſt, "which was on the ſtump of a tree, that had been ſome time "felled, ſo as much to reſemble the colour of the bird. In "this neſt were two young cuckows, one of which he "faſtened to the ground, by means of a peg and line, and very "frequently, for many days, beheld the old cuckow feed theſe "her young ones."

It is not impoſſible, therefore, that this moſt general opinion will turn out like the ſuppoſed effects of the venom of the tarantula; and, indeed, it is difficult to conceive how ſo ſmall a bird as a hedge-ſparrow can feed a cuckow: it is alſo remarkable, that the witneſſes often vary about the ſpecies of ſmall bird thus employed.

It is poſſible, however, that the cuckow (though it may not hatch its young) may feed them, when grown too large for the foſter parent.

If a ſingle bird of any other kind happens to be ſeen in the winter, without motion or apparent warmth, it is immediately conceived that it died by ſome common accident.

I ſhall, however, without any reſerve, ſay, that I rather conceive the notion which prevails with regard to the migration of many birds, may moſt commonly ariſe from the want of obſervation, and ready knowledge of them, when they are ſeen on the wing, even by profeſſed ornithologiſts.

It is an old ſaying, that "a bird in the hand is "worth two in the buſh;" and this holds equally with regard to their being diſtinguiſhed, when thoſe even who ſtudy natural hiſtory, have but a tranſient ſight of the animal *.

If, therefore, a bird, which is ſuppoſed to migrate in the winter, paſſes almoſt under the noſe of a Linnæan, he pays but little attention to it, becauſe he cannot examine the beak, by which he is to claſs the bird. Thus I conceive, that the ſuppoſing a nightingale to be a bird of paſſage ariſes from not readily diſtinguiſhing it, when ſeen in a hedge, or on the wing †.

This bird is known to the ear of every one, by its moſt ſtriking and capital notes, but to the eye of very

* An ingenious friend of mine makes always a very proper diſtinction between what he calls in-door and out-door naturaliſts.

Thomas Williſel, who aſſiſted Ray and Willughby much with regard to the natural hiſtory of the animals of this iſland, never ſtirred any where without his gun and fiſhing-tackle.

† No two birds fly in the ſame manner, if their motions are accurately attended to.

few indeed; becauſe the plumage is dull, nor is there any thing peculiar in its make.

The nightingale ſings perhaps for two months *, and then is never heard again till the return of the ſpring, when it is ſuppoſed to migrate to us from the continent, with redſtarts, and ſeveral other birds.

That it cannot really do ſo, ſeems highly probable, from the following reaſons.

This bird is ſcarcely ever ſeen to fly above twenty yards, but creeps at the bottom of the hedges, in ſearch of maggots, and other inſects, which are found in the ground.

If the ſwallow is not ſupplied with any food during its paſſage acroſs oceans, much leſs can the nightingale be ſo accommodated; and I have great reaſon to believe, from the death of birds in a cage, which have had nothing to eat for twenty-four hours, that theſe delicate and tender animals cannot ſupport a longer faſt, though uſing no exerciſe at all.

To this I may alſo add, that thoſe birds which feed on inſects are vaſtly more feeble than thoſe whoſe bills can crack ſeed, and conſequently, leſs capable of bearing any extraordinary hardſhips or fatigue.

But other proofs are not wanting, that this bird cannot migrate from England.

* Whilſt it ſings even, the bird can ſeldom be diſtinguiſhed, becauſe it is then almoſt perpetually in hedges, when the foliage is thickeſt, upon the firſt burſt of the ſpring, and when no inſects can as yet have deſtroyed conſiderable parts of the leaves.

Nightingales are very common in Denmark, Sweden, and Ruſſia *, as alſo in every other part of Europe, as well as Aſia, if the Arabic name is properly tranſlated.

Now, if it is ſuppoſed that many of theſe birds which are obſerved in the ſouthern parts of England, croſs the German ſea, from the oppoſite coaſt of the continent; why does not the ſame inſtinct drive thoſe of Denmark to Scotland, where no ſuch bird was ever ſeen or heard †?

But theſe are not all the difficulties which attend the hypotheſis of migration; nightingales are agreed to be ſcarcely ever obſerved to the weſtward of Dorſetſhire, or in the principality of Wales ‡, much leſs in Ireland.

I have alſo been informed, that theſe birds are not uncommon in Worceſterſhire, whereas they are exceſſively rare (if found at all) in the neighbouring county of Hereford.

Whence, therefore, can it ariſe, that this bird ſhould at one time be equal to the croſſing of ſeas, and at other times not travel a mile or two into an adjacent county? Does it not afford, on the other hand, a ſtrong proof, that the bird really continues

* See Dr. Birch's Hiſtory of the Royal Society, Vol. III. p. 189. Linnæi Fauna Suecica. and Biographia Britannica, art. FLETCHER; where it is ſaid, that they have in Ruſſia a greater variety of notes than elſewhere.

† Sir Robert Sibbald, indeed, conceives the nightingale to be a bird of North Britain; but, if I can depend upon many concurrent teſtimonies, no ſuch bird is ever ſeen or heard ſo far northward at preſent, nor could I ever trace them in that direction further than Durham.

‡ I have, however, frequently ſeen the nightingale's congener (and ſuppoſed fellow-traveller) the redſtart in Wales.

on

on the ſame ſpot during the whole year, but happens not to be attended to, from the reaſons I have before ſuggeſted?

I am therefore convinced, that if I was ever to live in the country during the winter, I ſhould ſee nightingales, becauſe I ſhould be looking after them, and I am accordingly informed, by a perſon who is well acquainted with this bird, that he hath frequently obſerved them during this ſeaſon *.

If it be aſked, why the nightingales are all this time mute? the anſwer is, that the ſame ſilence is experienced in many other birds, and this very muteneſs is, in part the cauſe why the bird is not attended to in winter.

I muſt now aſk thoſe who contend for the migration of a nightingale, what is to be its inducement for croſſing from the continent to us? a ſwallow, indeed, may want flies in winter, if it ſtays in England; but a nightingale is juſt as well ſupplied with inſects on the continent, as it can be with us after its paſſage †. I muſt alſo aſk, in what other part of

* I find they have alſo been ſeen in France during the winter. See a treatiſe, intitled, Aëdologue, Paris 1751. p. 23.

† I have omitted the mention of a more minute proof, that this bird cannot migrate from the continent, from the having kept them for ſome years in a cage, and having been very attentive to their ſong.

Kircher (in his Muſurgia) hath given us the nightingale's notes in muſical characters, from which it appears that the ſong of a German nightingale differs very materially from that of an Engliſh one: now, if there was a communication by migration between the continent and England, the ſong of theſe birds would not ſo materially differ, as I may, perhaps, ſhew, by ſome experiments I have made, in relation to the notes of birds.

I have before mentioned, that Mr. Fletcher, who was embaſſador from England to Ruſſia in the time of Queen Elizabeth, the

the world this bird is ſeen during the winter? muſt it migrate to Senegal with the ſwallow?

I am perſuaded likewiſe, that the cuckow never migrates from this iſland any more than the nightingale: this bird is either probably torpid in the winter, or otherwiſe is miſtaken for one of the ſmaller kind of hawks *; which it would be likewiſe in the ſpring, was it not for its very particular note at that time, and which only laſts during courtſhip, as it does with the quail.

If there is fine weather in February, this bird ſometimes makes this ſort of call to its mate, whilſt it is ſuppoſed to continue ſtill on the continent.

An inſtance is mentioned by Mr. Bradley †, of not only a ſingle cuckow, but ſeveral, which were heard in Lincolnſhire, during the month of February; and that able naturaliſt Mr. Pennant informs me, another was heard near Hatcham in Shropſhire, on the 4th of February in the preſent year ‡.

obſerved that the ſong of the Ruſſian nightingale differed from that of the Engliſh.

* Mr. Hunter, F. R. S. informs me, that he hath ſeen cuckows in the iſland of Belleiſle during the winter, which is not ſituated ſo much to the ſouthward, as to make it improbable that they may equally continue with us.

† Works of Nature, p. 77.

‡ Mr. Pennant received this account from Mr. Plimly, of Longnor in Shropſhire.

Thus likewiſe Mr. Edwards informs us, that the ſea fowls near the Needles, which are commonly ſuppoſed to migrate in winter, appear upon the weather's being very mild. Eſſays, p. 197.

It is amazing how much the being intereſted to diſcover particular objects contributes to our readily diſtinguiſhing them.

I remember the being much ſurprized that a grey-headed game-keeper always ſaw the partridge on the ground before they roſe, when I could not do the ſame. He told me, however, that the reaſon was, I lived in a time when the ſhooter had no occaſion to give himſelf that trouble.

He then further explained himſelf, by ſaying, that when he was young, no one ever thought of aiming at a bird when on the wing, and conſequently they were obliged to ſee the game before it was ſprung. He added, that from this neceſſity he could not only diſtinguiſh partridges, but ſnipes and woodcocks, on the ground.

Another inſtance of the ſame kind, is the great readineſs with which a perſon, who is fond of courſing, finds a hare ſitting in her form: thoſe, however, who are not intereſted about ſuch ſport, can ſcarcely ſee the hare, when it is under their noſe, and pointed out to them.

But more apparent objects eſcape our notice, when we are not intereſted about them.

Aſk any one, who hath not a botanical turn, what he hath ſeen in paſſing through a rich meadow, at the time it is moſt enamelled with plants in flower; and he will tell you, that he hath obſerved nothing but graſs and daiſies. If moſt gardeners even are in like manner aſked whether the flowers of a bean grow on every ſide of the ſtalk, they will ſuppoſe that they do,

whereas they, in reality, are only to be found on one ſide.

The mouths of flounders are often turned different ways, which one would think could not well eſcape the obſervation of the London fiſhmongers; yet, upon aſking ſeveral of them whether they had attended to this particular, I found they had not, till I ſhewed them the proof in their own ſhops.

A fiſhmonger, however, knows immediately whether a fiſh is in good eating order or not, on the firſt inſpection; becauſe this is a circumſtance which intereſts him.

I ſhall, however, by no means ſuppreſs two arguments in favour of migration, which ſeem to require the fulleſt anſwer that can be given to them.

The firſt is, that there are certain birds, which appear during the winter, but diſappear during the ſummer; and it may be aſked, where ſuch birds can be ſuppoſed to breed, if they do not migrate from this iſland.

Theſe birds are in number four, viz. the ſnipe, woodcock, redwing, and fieldfare.

As for the ſnipe, I have a very ſhort anſwer to give to the objection, as far as it relates to this bird; becauſe it conſtantly breeds in the fens of Lincolnſhire, Wolmar foreſt, and Bodmyn downs; it is therefore highly probable, that it does the ſame in almoſt every county of England.

I muſt own, however, that, till within theſe few years, I conceived the neſt of a ſnipe was as rarely ſeen in England, as that of a woodcock or fieldfare; and that able ornithologiſt Mr. Edwards ſuppoſes this to be

be the fact, in the late publication of his ingenious Eſſays on Natural Hiſtory *.

Woodcocks likewiſe are known to build in ſome parts of England every year; but, as the inſtances are commonly thoſe of a ſingle neſt, I would by no means pretend to draw the ſame proof againſt the ſummer migration of this bird, as in the former caſe of the ſnipe.

I will moſt readily admit, that theſe accidental facts are rather to be accounted for, perhaps, from the whimſy or ſillineſs of a few birds, which occaſions their laying their eggs in a place where they are eaſily diſcovered, and contrary to what is uſual with the bulk of the ſpecies.

I remember to have ſeen a duck's neſt once on the top of a pollard willow, near the decoy in St. James's Park; it would not be, however, fair to infer from ſuch an inſtance, that all ducks would pitch upon the ſame very improper ſituation for a neſt, upon which it is difficult to conceive how a web-footed bird could ſettle.

Some ſilly birds likewiſe now and then chooſe a place for building, which cannot eſcape the obſervation of either man or beaſt, as he paſſes by.

I therefore ſuppoſe that the few proofs of woodcocks neſts having been found in England, ariſe either from one or other of theſe two cauſes, and all which they ſeem to prove is, that our climate in ſummer is not abſolutely improper for them.

It is to be obſerved, however, that Mr. Cateſby conſiders ſuch inſtances as of equal force againſt the

* P. 72.

migration of the woodcock, as of the ſnipe *. Willughby alſo ſays, that Mr. Jeſſop ſaw young woodcocks ſold at Sheffield (which rather implies a certain number being brought to market), and that others had obſerved the ſame elſewhere †.

We are, indeed, informed by Scopoli ‡, that they breed conſtantly in Carniola, which is conſiderably to the ſouthward of any part of England: our country is therefore certainly not too hot for them.

Woodcocks appear and diſappear almoſt exactly about the ſame time in every part of Europe, and perhaps Africa ‖: heat and cold, therefore, ſeem not to have any operation whatſoever with regard to the ſuppoſed migration of this bird.

But it may be ſaid, what ſignifies proving the probability of woodcocks breeding in England, if it is not a known fact that they do ſo?

To this it ſhould ſeem there are ſeveral anſwers, as it is equally incumbent upon thoſe who contend for migration, to ſhew that theſe birds were ever ſeen on ſuch paſſage.

Another anſwer is, aſk ninety-nine people out of a hundred, whether ſnipes ever make a neſt in England; and they will immediately ſay, that they do not; ſo little are facts or obſervations of this ſort attended to.

But I ſhall now endeavour to give ſome other reaſons why woodcocks may not only continue with us

* Phil. Tranſ. abr. Vol. II. p. 889.
† B. iii. c. 1.
‡ Ornith. Leipſig, 1769.
‖ Shaw's Trav. Phyſ. Obſ. ch. ii.

during

during the ſummer, but alſo breed in large tracts of wood or bog, without being obſerved.

In the other parts of Europe, all birds almoſt are conſidered as game, or, at leaſt, are eaten as wholeſome food, Ray therefore mentions, that hawks and owls are ſold by the poulterers at Rome; every ſort of ſmall bird alſo is equally the foreign fowler's object *.

An Engliſhman does not conſider, on the other hand, perhaps twelve kinds of birds worthy his attention, or expence of powder, none of which are ever ſhot in our woods during the ſummer, nor are birds then diſturbed by felling either coppice or timber.

But it will be ſaid, why are not woodcocks ſometimes ſeen, however, as they may be ſuppoſed to leave their cover in ſearch of food?

To this I anſwer, that woodcocks ſleep always in the daytime, whilſt with us in the winter, and feed only during the night †. Whenever a woodcock, therefore, is fluſhed, he is rouſed from his ſleep by the ſpaniel or ſportſman, and then takes wing, becauſe there are no leaves on the trees to conceal the bird.

Whoever hath looked attentively at a woodcock's eye, muſt ſee that, from the appearance of it, the

* In one of Boccace's Novels, a lover, who lives at Florence, dreſſes a falcon for the dinner of his miſtreſs. Giorna a V. Novel. IX.

† Almoſt all the wild fowl of the duck kind alſo ſleep in the daytime, and feed at night.

ſight

ſight muſt be more calculated to diſtinguiſh objects by night than by day *.

The fact therefore is notorious to thoſe who cut glades in their woods, and fix nets for catching theſe birds, that they never ſtir but as it begins to be dark, after which they return again by day-break, when their ſight even then is ſo indifferent, that they ſtrike againſt the net, and thus become entangled.

No one with us ever thinks of fixing or attending ſuch nets in ſummer for woodcocks, becauſe it is not then ſuppoſed that there is any ſuch bird in the iſland; if they tried this experiment, however, I muſt own that I believe they would have ſport †.

Mr. Reinhold Forſter, F. R. S. who is an able naturaliſt, informs me, that the fowlers in the neighbourhood of Dantzick kill many woodcocks about St. John's day (or Midſummer), in the following man-

* I conceive alſo, it is from the eyes looking ſo dull; that this bird is generally conſidered as being ſo fooliſh: hence the Africans call the woodcock *hammar el hadgel*, or the partridge's aſs. Shaw's Phyſ. Obſ. ch. ii.

† I would aſk thoſe who will probably laugh at the very idea of ſuch ſport (which I do not, however, abſolutely inſure), whether, if I was to ſend them to any part of the Britiſh coaſt to catch the true anchovy, or tunny fiſh, they would not ſuppoſe equally that it was a fool's errand.

Notwithſtanding, however, this incredulity, I can produce the authority of both Ray (Syn. Piſc. p. 107.) and Mr. Pennant (Brit. Zool. ill. p. 34. 36.), that the true anchovy is caught in the ſea not far from Cheſter, and the tunny fiſh on the coaſt of Argyleſhire, together with the herrings, where they are called *mackrel ſture*.

Is it not amazing, however, that a fiſh of ſuch a ſize as the tunny ſhould never have been heard of, even by the Scotch naturaliſt Sir Robert Sibbald?

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mer, and that they continue to do ſo till the month of Auguſt.

They wait on the ſide of ſome of the extenſive woods in that neighbourhood, before day-break, for the return of the woodcock from his feeding in the night-time, and always depend upon having a very good chance of thus ſhooting many of them.

The Dantzickers, however, might be employed the whole ſummer near theſe woods in the day-time, without ever ſeeing ſuch a bird; and it ſeems therefore not improbable, that it ariſes from our not waiting for them at twilight or day-break, that they are never obſerved by Engliſhmen in the ſummer. If this bird ſhould, however, be ſeen in the night, it is immediately ſuppoſed to be an owl, which a woodcock does not differ much from in its flight.

To theſe reaſons for woodcocks not being obſerved, it may be added, that the bird is believed to be abſolutely mute, and conſequently, never diſcovers itſelf by its call.

If it be ſtill contended, that the neſt or young muſt ſometimes be ſtumbled upon, though in the centre of extenſive woods, or large bogs, the ſiſkin (or aberdavine *) is a much more extraordinary inſtance of concealing its neſt and young.

The plumage of this bird is rather bright than otherwiſe; and the ſong, though not very pleaſing, yet is very audible, both which circumſtances ſhould diſcover it at all times; yet Kramer † informs us, that, though immenſe numbers breed annually on

* Brit. Zool. p. 309.

† Elenchus Animalium per Auſtriam, p. 261. Viennæ, 1756.

the banks of the Danube, no one ever obſerved the neſt.

This bird is rather uncommon in England; ſo that if I aſk when the neſt was ever found within the verge of the iſland, it may be conſidered as rather an unfair challenge.

There is another bird, however, called a red-poll *, which is taken in numbers during the Michaelmas and March flights by the London bird-catchers, whoſe neſt, I believe, was never diſcovered in England, though I have ſeen them in pairs during the ſummer, both in the mountainous parts of Wales and highlands of Scotland †.

But I ſhall now mention another proof that woodcocks breed in England.

The Reverend Mr. White, of Selborn, who is not only a well-read naturaliſt, but an active ſportſman, informs me, that he hath frequently killed woodcocks in March, which, upon being opened, had the rudiments of eggs in them, and that it is uſual at that time to fluſh them in pairs. Willughby alſo obſerves the ſame ‡.

This bird, therefore, certainly pairs before its ſuppoſed migration; and can it be conceived that this ſtrict union (which birds in a wild ſtate ſo faithfully adhere to) ‖, ſhould take place before they

* Brit. Zool. p. 312.

† This elegant little bird is very common in Hudſon's Bay, where it feeds chiefly on the birch trees; which being more common in the northern than ſouthern parts of Great Britain, may account for the bird's being more often ſeen northward.

‡ B. III. c. i.

‖ It is believed that no mule-bird was ever ſeen in a wild ſtate, notwithſtanding M. de Buffon ſuſpects many an intrigue

traverſe

traverſe oceans, and when they cannot as yet have pitched upon a proper place for concealing their neſt and neſtlings?

Let us examine if this intercourſe before migration takes place in other birds, which are ſuppoſed to croſs wide extents of ſea: and a quail affords ſuch proof.

I have been preſent when theſe birds have been caught in the ſpring, which always turn out to be males, and are enticed to the nets by the call of the hen; quails therefore pair after they appear in England.

But I ſhall now conſider the other two inſtances of birds which are ſeen with us in the winter, and are not obſerved in the ſummer; I mean, the fieldfare and redwing.

And firſt, let us examine, where theſe birds are actually known to breed: the northern naturaliſts ſay, in Sweden; Klein, in the neighbourhood of Dantzick, which is only in lat. 54° 30′ *; and Willughby, in Bohemia.

in the receſſes of the woods (Hiſt. Nat. des Oiſeaux, tom. I.) ſuch irregular intercourſe is only obſerved in cages and aviaries, where birds are not only confined, but pampered with food.

* See Klein, de Avibus Erraticis, p. 178. Klein, however, cites Zornius, who lived in the ſame part of Germany, and who aſſerts that the *turdus Iliacus* (or redwing) leaves thoſe parts in the ſpring. The circumſtance therefore of the redwing's breeding in numbers *(per multitudines)* had eſcaped the notice of Zornius, though he hath written a diſſertation on this queſtion.

Is it at all ſurprizing, after this, that ſuch diſcoveries, if made at all, ſhould not be commonly heard of?

As they therefore build their neſts in more Southern parts of Europe, there is certainly no natural impoſſibility of their doing ſo with us, though, I muſt own, I never yet heard but of one inſtance, which was a fieldfare's neſt found near Paddington *.

I cannot, however, but think it is only from want of obſervation, that more of ſuch neſts have not been diſcovered, which are only looked after by very young children; and the chief object is the eggs, or neſtlings, not the bird which lays them †.

The plumage therefore and flight of the fieldfare or redwing being neither of them very remarkable, it is not at all improbable they may remain in ſummer, without being attended to; and particularly the redwing, which ſcarcely differs at all in appearance from other thruſhes. Thus the cough is by no means peculiar to Cornwall, as is commonly ſuppoſed, but is miſtaken for the jackdaw, or rook.

But it may be ſaid, that theſe birds fly in flocks during the winter, and if they remain here during the ſummer, we ſhould ſee them equally congregate.

I have not before referred to Klein, who hath written a very able treatiſe, in which he argues againſt the poſſibility of migration in birds; becauſe, though I ſhould be very happy to ſupport my poor opinion by his authority, yet I thought it right neither to repeat his facts, or arguments.

* See alſo Harl. Miſc. Vol. II. p. 561.

† Many birds alſo build in places of ſuch difficult acceſs, that boys cannot climb to; birds neſting is confined almoſt entirely to hedges, and low ſhrubs.

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This circumſtance, however, is by no means peculiar to the fieldfare and redwing; moſt of the hard-billed ſinging birds do the ſame in winter, but ſeparate in ſummer, as it is indeed neceſſary all birds ſhould during the time of breeding.

I ſhall now conſider another argument in favour of migration, which I do not know hath been ever inſiſted upon by thoſe writers who have contended for it, and which at firſt appearance ſeems to carry great weight with it.

There are certain birds, which are ſuppoſed to viſit this iſland only at diſtant intervals of years; the Bohemian chatterer and croſs-bill * (for example) once perhaps in twenty.

The fact is not diſputed, that ſuch birds are not commonly obſerved in particular ſpots from year to year; but this may ariſe from two cauſes, either a partial migration within the verge of our iſland, or perhaps more frequently from want of a ready knowledge of birds on the wing, when they happen to be ſeen indeed, but cannot be examined.

I never have diſputed ſuch a partial migration; and indeed I have received a moſt irrefragable proof of ſuch a flitting, from the Rev. Mr. White of Selborn in Hampſhire, whoſe accurate obſervations I have before had occaſion to argue from.

* This bird changes the colour of its plumage at different ſeaſons of the year, which is ſometimes red.

The firſt account we have of their being ſeen, is in the Ph. Tr. abr. Vol. V. p. 33. where Mr. Edward Lhwyd ſuſpects them to be Virginia nightingales, from their feathers being red, and had no difficulty of at once ſnppoſing that they had croſſed the Atlantic.

The rock (or ring-ouzel) hath always hitherto been conſidered as frequenting only the more mountainous parts of this iſland: Mr. White, however, informs me that there is a regular migration of theſe birds, which flock in numbers, and regularly viſit the neighbourhood of Selborn, in Hampſhire *.

I therefore have little doubt but that they equally appear in others of our Southern counties; though it eſcapes common obſervation, as they bear a ſort of general reſemblance to the black-bird, at leaſt to the hen of that ſpecies.

I own alſo, that I always conceived the Bohemian chatterer was not obſerved in Great Britain but at very diſtant intervals of years, and then perhaps only a ſingle bird, whereas Dr. Ramſey (profeſſor of natural hiſtory at Edinburgh) informs Mr. Pennant, that flocks of theſe birds appear conſtantly every year in the neighbourhood of that city †.

As for croſs-bills, they are ſeen more and more in different parts of England, ſince there have been ſo many plantations of firs: this bird is remarkably fond of the ſeeds of theſe trees, and therefore changes its place to thoſe parts where it can procure the greateſt plenty of ſuch food ‡.

* See alſo Br. Zool. Ill. p. 56.

† Theſe birds are ſaid to be particularly fond of the berries of the mountain-aſh, which is an uncommon tree in the Southern parts of Great Britain, but by no means ſo in the North.

‡ This bird ſhould alſo, for the ſame reaſon, be found from year to year in the cyder counties, if it was true (as is commonly ſuppoſed) that he is particularly fond of the kernels of

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This flitting therefore by no means amounts to a total and periodical migration over ſeas, but is no more than what is experienced with regard to ſeveral birds.

For example, the Britiſh Zoology informs us *, that, at an average, 4000 dozen of larks are ſent up from the neighbourhood of Dunſtable, to ſupply the London markets; nor do I hear, upon inquiry, that there is any complaint of the numbers decreaſing from year to year, notwithſtanding this great conſumption.

I ſhould not ſuppoſe that 50 dozen of ſkylarks are caught in any other county of England; and it ſhould therefore ſeem that the larks from the more adjacent parts croud in to ſupply the vacuum occaſioned by the London Epicures, which may be the cauſe poſſibly of a partial migration throughout the whole iſland.

I begin now to approach to ſomething like a concluſion of this (I fear) tedious diſſertation: I think, however, that I ſhould not omit what appears to me at leaſt as a demonſtration, that one bird, which is commonly ſuppoſed to migrate acroſs ſeas, cannot poſſibly do ſo.

apples, which it is conceived he can inſtantly extract with his very ſingular bill.

Mr. Tunſtall, F. R. S. however, at my deſire, once placed an apple in the cage of a croſs-bill, which he had kept for ſome time in his very valuable and capital collection of live birds: upon examining the apple a fortnight afterwards, it remained untouched.

* P. 235.

A landrail

A landrail *, when put up by the ſhooter, never flies 100 yards; its motion is exceſſively ſlow, whilſt the legs hang down like thoſe of the water fowls which have not web feet, and which are known never to take longer flights.

This bird is not very common with us in England, but is exceſſively ſo in Ireland, where they are called corn-creaks.

Now thoſe who contend that the landrail, becauſe it happens to diſappear in winter, muſt migrate acroſs oceans, are reduced to the following dilemma.

They muſt firſt either ſuppoſe that it reaches Ireland periodically from America; which is impoſſible, not only becauſe the paſſage of the Atlantic includes ſo many degrees of longitude, but becauſe there is no ſuch bird in that part of the globe.

If the landrail therefore migrates from the continent of Europe to Ireland, which it muſt otherwiſe do, the neceſſary conſequence is, that many muſt paſs over England in their way Weſtward to Ireland; and why do not more of theſe birds continue with us, but, on the contrary, immediately proceed acroſs the St. George's channel?

Whence ſhould it ariſe alſo, if they paſs over this iſland periodically in the ſpring and autumn, that they are never obſerved in ſuch paſſage, as I have already ſtated their rate in flying to be exceſſively ſlow; to which I may add, that I never ſaw them riſe to the height of twenty yards from the ground, nor indeed exceed the pitch of a quail.

* Br. Zool. p. 387.

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I have now ſubmitted the beſt anſwers that have occurred, not only to the general arguments for the migration of birds acroſs oceans, but alſo to the particular facts, which are relied upon as actual proofs of ſuch a regular and periodical paſſage.

Though I may be poſſibly miſtaken in many of the conjectures I have made, yet I think I cannot be confuted but by new facts, and to ſuch freſh evidence, properly authenticated, I ſhall moſt readily give up every point, which I have from preſent conviction been contending for.

I may then perhaps alſo flatter myſelf, that the having expreſſed my doubts with regard to the proofs hitherto relied upon, in ſupport of migration, may have contributed to ſuch new, and more accurate obſervations.

It is to be wiſhed, however, that theſe more convincing and deciſive facts may be received from iſlanders (the more diſtant from any land the better*) and not from the inhabitants of a continent; as it does not ſeem to be a fair inference, becauſe certain birds leave certain ſpots at particular times, that they therefore migrate acroſs a wide extent of ſea.

For example, ſtorks diſappear in Holland during the winter, and they have not a very wide tract of ſea between them and England; yet this bird never frequents our coaſts.

* I would particularly propoſe the iſlands of Madera and St. Helena; to theſe, I would alſo add the iſland of Aſcenſion (had it any inhabitants), as likewiſe Juan Fernandez, for the Pacifick ocean.

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The ſtork, however, may be truely conſidered as a bird of paſſage, by the inhabitants of thoſe parts of Europe (wherever ſituated) to which it may be ſuppoſed to reſort during the winter, and where it is not ſeen during the ſummer.

I am, dear Sir,

Your moſt faithful,

humble ſervant,

Daines Barrington.

P. S.

P. S.

SINCE I ſent to you my very long letter on the migration of birds, I have had an opportunity of examining the "Planches Enluminées," which are ſaid to be publiſhed under M. de Buffon's inſpection, and which ſeem to afford a demonſtration of M. Adanſon's inaccuracy in ſuppoſing either the roller, or ſwallows, which he caught in his ſhip, near the coaſt of Senegal, to be the ſame with thoſe of Europe.

In the 8th of theſe plates, there is a coloured figure of a bird, called le rollier d'Angola, which agrees exactly with M. Adanſon's deſcription *; but he truſted too much to his memory, when he pronounced it to be the ſame with the Garrulus Argentoratenſis of Willughby, and therefore ſuppoſed it to be on its paſſage to Europe.

This bird hath, indeed, in many reſpects, a very ſtrong reſemblance to the common roller of Europe, which is repreſented alſo in the Planches Enluminées, plate 486; but it differs moſt materially in the length of the two exterior feathers of the tail, as well as in the colour of the neck, which in the African roller is of a moſt bright green, and in the European of rather a dull blue.

In the 310th plate, there is likewiſe a coloured repreſentation of the "Hirondelle a ventre roux du "Senegal," which ſpecimen was poſſibly furniſhed by Monſ. Adanſon himſelf.

* Voyage au Senegal, p. 15. There is alſo another African bird, repreſented in the "Planches Enluminées," which might very eaſily, on a haſty inſpection, be miſtaken for the Garrulus Argentoratenſis, viz. the Guepier a longue queue du Senegal. Pl. Enl. p. 314.

The roller of Angola is alſo engraved by Briſſon, T. ii. pl. 7.

It very much reſembles the European ſwallow, but the tail differs, as the forks (in the Senegal ſpecimen) taper from the top of the two exterior feathers to the bottom, at three regular diviſions, whereas in the European they are nearly of the ſame width throughout.

The convincing proof, however, that the "Hirondelle a ventre roux du Senegal" differs from our chimney ſwallow is, that the rump is entirely covered with a bright orange or cheſnut, which in the European ſwallow "is of a very lovely but dark "purpliſh blue colour *."

Having lately looked into Ariſtotle's Natural Hiſtory, with regard to the cuckow, I take this opportunity alſo of enlarging on the doubts I have thrown out, in relation to the prevailing notion of this bird's neſtlings being hatched and fed by foſter parents.

I find that this moſt general opinion takes its riſe from what is ſaid by this father of natural hiſtory, in his ninth book, and twenty-ninth chapter.

Ariſtotle there aſſerts, that the cuckow does not build a neſt itſelf, but makes uſe moſt commonly of thoſe of the wood-pigeon, hedge-ſparrow, lark, (which he adds are on the ground) as well as that of the χλωρις †, which is in trees.

Now, if we take the whole of this account together, it is certainly not to be depended upon; for the wood-pigeon ‡ and hedge-ſparrow do not build upon the ground, and no one ever pretended to have

* See Willughby, p. 312.

† The χλωρις is rendered *luteola*; but, as there is no deſcription, it is difficult to ſay what bird Ariſtotle here alludes to; Zinanni ſuppoſes it to be the greenfinch.

‡ The wood-pigeon, from its ſize, ſeems to be the only bird which is capable of hatching, or feeding, the young cuc-

found

found a cuckow's egg in the neſt of a lark, which, indeed, is ſo placed.

I have before obſerved, that the witneſſes often vary with regard to the bird in which the cuckow's egg is depoſited *; and Ariſtotle himſelf, in the ſeventh chapter of his ſixth book, confines the foſter-parents to the wood-pigeon and hedge-ſparrow, but chiefly the former.

If the age † of Ariſtotle is conſidered, when he began to collect the materials for his Natural Hiſtory, by the encouragement of Alexander after his conqueſts in India ‡, it is highly improbable he ſhould have written from his own obſervations. He therefore ſeems to have haſtily put down the accounts of the perſons who brought him the different ſpecimens from moſt parts of the then known world.

Inaccurate, however, and contradictory as theſe reports often turn out, it was the beſt compilation which the ancients could have recourſe to; and Pliny

kow; yet, if it is recollected that this bird lives on ſeeds, it is probable that the cuckow, whoſe nouriſhment is inſects, would either be ſoon ſtarved, or incapable of digeſting what was brought by the foſter-parent. This objection is equally applicable to the χλωρις, if it is our greenfinch.

* Thus Linnæus ſuppoſes it (in the Fauna Suecica) to be the white wagtail, which bird builds in the banks of rivers, or roofs of houſes, (See Zinanni, p. 51.) where it is believed no young cuckow was ever found.

† He did not leave the ſchool of Plato till the age of thirty-eight (or, as ſome ſay, forty); after which, ſome years paſſed before he became Alexander's preceptor, who was then but fourteen: nor could he have written his Natural Hiſtory, probably, till twelve years after this, as Pliny ſtates that ſpecimens were ſent to him by Alexander, from his conqueſts in India. Ariſtotle therefore muſt have been nearly ſixty, when he began this great work, and conſequently muſt have deſcribed from the obſervations of others.

‡ Pliny, L. viii. c. 16.

therefore profeſſes only to abridge him, in which he often does not do juſtice to the original.

Whatever was aſſerted by Ariſtotle, is well known to have been moſt implicitly believed, till the laſt century; and I am convinced that many of the learned in Europe would, before that time, not have credited their own eyeſight againſt what he had delivered.

There cannot be a ſtronger proof that the general notion about the cuckow ariſes from what is laid down by Ariſtotle, than the chapter which immediately follows, as it relates to the goatſucker, and ſtates that this bird ſucks the teats of that animal.

From this circumſtance, the goatſucker hath obtained a ſimilar name in moſt languages, though it is believed no one (who thinks at all about matters of this ſort) continues to believe that this bird ſucks the goat *, any more than the hedgehog does the cow.

I beg leave, however, to explain myſelf, that I give theſe additional reaſons only for my doubting with regard to this moſt prevailing opinion; becauſe I am truly ſenſible that many things happen in nature, which contradict all arguments from analogy, and I am perſuaded, therefore, that the firſt perſon who gave an account of the flying fiſh, was not credited by any one, though the exiſtence of this animal is not now to be diſputed.

All that I mean to contend for is, that the inſtances of ſuch extraordinary peculiarities in animals, ſhould be proportionably well atteſted, in all the neceſſary circumſtances.

I muſt own, for example, that nothing ſhort of the following particulars will thoroughly ſatisfy me on this head.

* See Zinanni p. 95. who took great pains to detect this vulgar error.

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The hedge-ſparrow's neſt muſt be found with the proper eggs in it, which ſhould be deſtroyed by the cuckow, at the time ſhe introduces her ſingle egg *.

The neſt ſhould then be examined at a proper diſtance from day to day, during the hedge-ſparrow's incubation, as alſo the motions of the foſter parent attended to, particularly in feeding the young cuckow, till it is able to ſhift for itſelf.

As I have little doubt that the laſt mentioned circumſtance will appear deciſive to many, without the others which I have required, it may be proper to give my reaſons, why I cannot conſider it alone, as ſufficient.

There is ſomething in the cry of a neſtling for food, which affects all kinds of birds, almoſt as much as that of an infant, for the ſame purpoſe, excites the compaſſion of every human hearer †.

I have taken four young ones from a hen ſkylark, and placed in their room five neſtling nightingales, as well as five wrens, the greater part of which were reared by the foſter parent.

It can hardly in this experiment be contended, that the ſkylark miſtook them for her own neſtlings, be-

* I could alſo wiſh that the following experiment was tried. When a hedge-ſparrow hath laid all her eggs, a ſingle one of any other bird, as large as a cuckow, might be introduced, after which if either the neſt was deſerted, or the egg too large to be hatched, it would afford a ſtrong preſumption againſt this prevailing opinion. I muſt here alſo take notice, that Mr. Hunter, F. R. S. who hath diſſected hen cuckows, informs me that they are not incapacitated from hatching their eggs, as hath been ſuppoſed by ſome ornithologiſts.

† I am perſuaded that a cuckow is oftener an orphan, than any other neſtling, becauſe, from the curioſity which prevails with regard to this bird, the parents are eternally ſhot.

cauſe

cauſe they differed greatly, not only in number and ſize, but in their habits, for nightingales and wrens perch, which a ſkylark is almoſt incapable of, though, by great aſſiduity, ſhe at laſt taught herſelf the proper equilibre of the body.

I have likewiſe been witneſs of the following experiment: two robins hatched five young ones in a breeding cage, to which five others were added, and the old birds brought up the whole number, making no diſtinction between them.

The Aëdologie alſo mentions (which is a very ſenſible treatiſe on the nightingale *) that neſtlings of all ſorts may be reared in the ſame manner, by introducing them to a caged bird, which is ſupplied with the proper food.

Not only old birds, however, attend to this cry of diſtreſs from neſtlings, but young ones alſo which are able to ſhift for themſelves.

I have ſeen a chicken, not above two months old, take as much care of younger chickens, as the parent would have ſhewn to them which they had loſt, not only by ſcratching to procure them food, but by covering them with her wings; and I have little doubt but that ſhe would have done the ſame by young ducks.

I have likewiſe been witneſs of neſtling thruſhes of a later brood, being fed by a young bird which was hatched earlier, and which indeed rather overcrammed the orphans intruſted to her care; if the bird however erred in judgement, ſhe was certainly not deficient in tenderneſs, which I am perſuaded ſhe would have equally extended to a neſtling cuckow.

* Paris, 1751, or 1771.

XXII. ΚΟΣ-